NOTES ON NORTH AMERICAN DOLICHOPSYLLID SIPHONAPTERA.

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Through the courtesy of the authorities of the United States National Museum, the writer has had the opportunity to study their extensive collections of fleas and to report upon some of them below. Particular thanks are due to Dr. H. E. Ewing, of the Bureau of Entomology and Plant Quarantine, in whose honor the following new species is named, for his helpful advice and assistance.

FAMILY DOLICHOPSYLLIDAE.

Amphipsylla ewingi, new species.

(Pl. 10, Fig. 1.)

Male.—Head subangulate in front, preantennal region with four rows of bristles. Uppermost row consisting of seven bristles, the next row below this one reduced to but one bristle, the remaining two rows consisting of two bristles each. Eye vestigial, but the vestiges large and pigmented. Postantennal region with three rows of bristles. Uppermost row consisting of two bristles, the middle row of four or five, and the lowermost or submarginal row of seven. Labial palpus five-segmented, reaching beyond one-half the length of the fore coxa. Pronotal ctenidium consisting of about ten spines on a side. Three antepygidial bristles present on a side, the middle the longest, and the lowermost shorter than the uppermost. *Modified segments.*—Process of clasper not well set off from posterior abdominal tergites in the single specimen at hand. Movable finger more or less subquadrate distally, bearing on dorsal margin a single bristle and on posterior margin about nine bristles of which one is short, broad, heavily pigmented and spiniform (Fig. 1.). Spring of penis not completing a single turn.

Type host and type locality.—"Alaska short-tailed mouse" at Golovin, Alaska.

Type slide.—U. S. N. M. No. 53585.

Type material.—Male holotype collected by E. C. Cushing from the "Alaska short-tailed mouse" at Golovin, Alaska, May 7, 1931. Male paratype from *Microtus* sp. at Takotna, Alaska, collected by R. H. Twitchell May 29, 1932, in the United States National Museum.

The genus *Amphipsylla* Wagner is circumpolar in distribution, but most of its species occur in the palearctic region. The above described new species is the second to be reported from North America. In 1905 Rothschild described *Ceratophyllus*

pollionis from Alberta which was subsequently reduced to the status of a subspecies of *Amphipsylla sibirica* Wagner 1898. The two forms may readily be separated by differences in the structure of the movable fingers.

Opisodasys spatiosus, new species.

(Pl. 10, Fig. 2.)

Male.—Frontal tubercle small, acuminate. Ocular row consisting of three bristles. Frontal row reduced to but one bristle above which are two or three others near antennal groove. Numerous small setae above eye near antennal groove. Postantennal region of head armed with but a single bristle in addition to the marginal row of about five. Labial palpus extending beyond the apex of the fore coxa, reaching almost to the apex of fore trochanter. Pronotal ctenidium consisting of about 12 spines on a side. Three antepygidial bristles present on a side, one of which is aborted, and of the remaining two, one is about twice as long as the other. *Modified segments.*—Process of clasper broad, armed with two bristles at its apex. Movable finger armed with two spiniform bristles, between which is located a third much smaller one (Fig. 2). Manubrium conspicuous, widely expanded distad. Penis slender without a distal process. Spring short, not completing a single turn.

Type host and type locality.—"Chiricahua red squirrel" at Chiricahua Mts., Arizona.

Type slide.—U. S. N. M. No. 53586.

Type material.—Male holotype collected by W. P. Taylor from the "Chiricahua red squirrel" at Chiricahua Mts., Arizona, August 18, 1933, and male paratype bearing the same data in the United States National Museum.

This species may be readily distinguished from the four other North American members of its genus, whose males are known, by the structure of the movable finger. *O. robustus* Jordan 1925, from Arizona and New Mexico, is known only from the female.

Ceratophyllus quebecensis, new species.

(Pl. 10, Figs. 3 and 4.)

Male.—Frontal tubercle prominent and acuminate. Ocular row consisting of three bristles of which the middle is shortest. Frontal row consisting of five short bristles. Postantennal region armed with two bristles in addition to a submarginal row of five. Labial palpus reaching to about four-fifths the length of the fore coxa. Pronotal ctenidium consisting of 15 or 16 spines on a side. Three antepygidial bristles present on a side, the middle robust and well developed, the other two aborted. *Modified segments.*—Process of clasper prominent, more or less rounded distally, where it is armed with three bristles. Movable

finger shaped as is shown in Fig. 3, its posterior margin armed with four bristles. Penis long and slender, ending in a curved process. Spring not long, not completing a single turn. Sternite VIII broad and conspicuous, its apex armed with about four bristles.

Female.—General structure as in male. Receptaculum seminis very similar to that of *C. diffinis* Jordan, but differing in details, as is shown in Fig. 4.

Type host and type locality.—"Eider down" at St. Mary's Island, Quebec.

Type slide.—U. S. N. M. No. 53587.

Type material.—Male holotype and female allotype from "eider down" at St. Mary's Island, Quebec, collected June 30, 1938 by H. S. Peters, in the United States National Museum.

This species may be readily separated from the other North American members of its genus by the male and female genitalia.

Orchopeas dieteri (C. Fox), new comb.

(Pl. 10, Figs. 5 and 6.)

Ceratophyllus nepos dieteri C. Fox, 1929, Ent. News. 40 : 218.

Male.—Frontal tubercle small and acuminate. Ocular row consisting of three bristles, the middle much reduced. Frontal row represented by a single bristle near the antennal groove. Numerous small setae situated above eye. Post-antennal region with two bristles, one long and one short, near the antennal groove and a marginal row of about five bristles. Labial palpus extending beyond the apex of the fore coxa. Pronotal ctenidium consisting of about nine spines on a side. Two antepygidial bristles present on a side, one almost twice as long as the other; above the long antepygidial bristle is a very slender bristle. *Modified segments.*—Process of clasper sclerotized in such a way as to give the appearance of being bent at apex towards movable finger. Movable finger long and broad, armed with four spiniform bristles of which the lowermost three are more or less evenly spaced while the uppermost is set off from the others (Fig. 6). Penis long and slender, not ending in a process. Spring short, extending only slightly beyond the penis and not completing a single turn.

Female.—Chaetotaxy of head as in male. Labial palpus extending to apex of fore coxa. Three antepygidial bristles present on a side, middle the longest, uppermost the shortest. Sternite VII divided by a deep sinus into two lobes of which the lower extends further distad than the upper. Receptaculum seminis as in other species of the genus (Fig. 5).

Type host and type locality.—Bobcat, *Lynx rufus* at Los Angeles Co., California.

Type slide.—U. S. N. M. No. 41820.

Type material.—Described from the male holotype and female allotype in the United States National Museum.

Originally described as a subspecies of *O. nepos* (Rothschild),

this species is more closely related to *O. latens* (Jordan). From both of these it differs in the male by the shape of the process of the clasper and the movable finger, and in the female by the fact that the upper lobe of sternite VII does not extend so far distad as the lower lobe.

Orchopeas labiatus (Baker).

(Pl. 10, Fig. 7.)

Ceratophyllus labiatus Baker, 1904, U. S. Natl. Mus. Proc. 27 : 387, 402, Plate XIX, figs. 6–9.
Ceratophyllus labiatus Baker, 1905, U. S. Natl. Mus. Proc. 29 : 133.
Ceratophyllus labiatus Jordan, 1929, Novitates Zool. 35 : 29.
Orchopeas labiatus Jordan, 1933, Novitates Zool. 39 : 72.

This species was unfortunately based upon a single female which has not yet been brought into alignment with its opposite sex. According to Jordan (1929), its closest allies are *O. nepos* (Rothschild) and *O. caedens* (Jordan), if it is not identical with one of these species. The differences in sternite VII are slight but sufficient to warrant the maintenance of *O. labiatus* as a separate species. Its status should be elucidated when the common Idaho species of *Orchopeas* are known. Details of the structure of sternite VII which has not been illustrated before are shown in Fig. 7.

Opisocrostis ornatus, new species.

(Pl. 10, Fig. 8.)

Male.—Preantennal region of head armed with an ocular row of three bristles of which the middle is situated higher than the other two. Frontal row consisting of three widely separated bristles. Bristles of second antennal segment very long. Postantennal region armed with a single bristle in addition to a marginal row of three or four. Labial palpus long, extending beyond the apex of the trochanters by a segment. Pronotal ctenidium consisting of nine or ten spines on a side. One well developed antepygidial bristle present on a side. *Modified segments.*—Process of clasper broad and lobular, armed with about nine weak bristles on the dorsal margin. Movable finger acuminate at its apex, armed with a number of bristles on its posterior margin as is shown in Fig. 8. Penis broad and heavy appearing, truncate distally. Spring long, but not completing a single turn.

Type host and type locality.—Prairie-dog, *Cynomys gunnisoni*, at Saguache Co., Colorado.
Type slide.—U. S. N. M. No. 53588.
Type material.—Male holotype collected from the prairie-dog, *Cynomys gunnisoni*, at Saguache Co., Colorado, by S. C.

McCampbell, June 26, 1926, in the United States National Museum.

This species is closely allied to *Opisocrostis tuberculatus* (Baker) from which it differs particularly in the structure of the male genitalia.

Explanation of Plate No. 9.

Fig. 1.—*Amphipsylla ewingi*, new species, movable finger.
Fig. 2.—*Opisodasys spatiosus*, new species, movable finger.
Fig. 3.—*Ceratophyllus quebecensis*, new species, movable finger and sternite VIII.
Fig. 4.—*Idem.* receptaculum seminis.
Fig. 5.—*Orchopeas dieteri* (C. Fox), receptaculum seminis and sternite VII.
Fig. 6.—*Idem*, process of clasper and movable finger.
Fig. 7.—*Orchopeas labiatus* (Baker), sternite VII of female.
Fig. 8.—*Opisocrostis ornatus*, new species, process of clasper and movable finger.

A NOTE CONCERNING THE LARVA OF A BEETLE, BOROS SCHNEIDERI (PANZER), A EUROPEAN SPECIES.

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Following the author's publication of a technical description of the North American beetle larva *Boros unicolor* Say,[1] Dr. Ivar Trägårdh, of the Experiment Station at Stockholm, Sweden, through the courtesy of Dr. Carl H. Lindroth, sent to the writer, for study, a single larval specimen of the European species, *Boros schneideri* (Panzer) (Pl. 9, figs. 1–3).[2] Dr. Trägårdh thought this larva would be of interest to the writer because it agreed very well with the description and figures of the North American species mentioned above (Pl. 9, figs. 4 and 5).

The writer's comparison of the morphological details of the larvae of both the European and the North American specimens revealed them to be almost identical, even to the arrangement of their setae. This remarkable similarity of the immature stage of these two species is not surprising in view of the fact that Say,[3] in 1826, had also noted the mature adult of *B. unicolor* Say to be "very closely allied to that of *B. elongatus* Herbst," a synonym of *B. schneideri* (Panzer).

[1] St. George, R. A. The Larva of *Boros unicolor* Say and the Systematic Position of the Family Boridae Herbst. Proc. Ent. Soc. Wash. 33 : 103–115, 2 pl., 1931.

[2] Specimen collected by Anton Jansson on the island of Gotska Sandön, Örebro, Sweden.

[3] Say, Thomas. Jour. Acad. Nat. Sci. Phila. 5 : 238, 1826.